

**LIGHTNING DATA CENTER
MINUTES
JULY 13, 2007
ST. ANTHONY CENTRAL HOSPITAL, DENVER, CO
www.stanthonyldc.org**

Quote of the Month:

“Somewhere in the neighborhood of 70% of lightning strikes hit phone systems through their connection to the local telephone company...” from “Lightning Protection 101 – Protecting Your Telecommunication Investment” by Telephone System Learning Seminars, Inc. On the web at:
<http://www.tellearn.com/Newsletters/lightning.html>

1. Meeting began at 11:30 am and adjourned at 1:20 pm.
2. Members present: Mullen, Burrows, McDonough, Clark, Wallace, Keen, Cybuske, Hislop, Larson, Mendez, Swanson, Langford, Foley, Wachtel, Collier, Gift, Cui-Gift, Ashton, Black. Michael Cherington initially moderated the meeting until Michael Foley arrived. Steve Clark has been asked to officially record the minutes for the LDC meetings and he has accepted the responsibility.
3. Gil brought two newspaper articles. The first was from the Thursday, July 12, 2007 Rocky Mountain News on the issue of wearing an Ipod while being outdoors during a thunderstorm. The article referred to a patient that had been interviewed by Mike Foley and Ken Langford. The second article was from the June 22, 2007 edition of The Palm Beach Post and described a fatal “bolt from the blue.” The article said such flashes have a positive charge, carry as much as 10 times the current, are much hotter, and last much longer. It was generally agreed by the members that there is not sufficient data to support these statements.
4. Carl Swanson asked if people are safe swimming in an indoor pool while a thunderstorm is overhead. He had relatives swimming at a local park with such facilities, and there were people playing tennis outdoors while a thunderstorm was overhead. No notice or warning was given by the staff to clear the area. Other members advised the National Lightning Safety Institute and the NCAA both have policies and/or safety measures to be addressed regarding lightning and pools. It was unclear if these entities gave specific attention to indoor pools.
5. Ken Langford, Dick Burrows, and Greg Stewart presented their ideas on what a lightning safety poster for the U.S. Forest Service should include. Comments and posters from all three are appended to this newsletter. Ken’s poster is a .jpg file; Dick’s poster is a .png file; and Greg’s two posters are .pdf files. Please e-mail your responses to all three people. Emails are: Ken: mrrandom@comcast.net, Dick: wreckdistno@prolynx.com, Greg: gslightning@yahoo.com.

6. We had an excellent presentation from three men from Qwest Communications: Tony Black, Network Engineer, Mike Cybyske with Corporate Risk Management and Disaster Preparedness, and Curtis Ashton, Staff Engineer with Qwest's Network Operations Organization. The presentation was about telecom disaster preparedness, with emphasis on lightning issues.

Curtis started by discussing what is done to best protect equipment at their facilities and personnel in the field. First, equipment is not powered on commercial AC, but instead, is run on 48V internally. They also have backup batteries and generators. Second, safeguards for radio frequency facilities are utilized per NFPA 780. Qwest tends to use Franklin rods and so-called "Fuller brushes" for lightning protection. Third, grounding configuration diagrams were shown for facilities, radio sites, residences, and high-voltage areas. Finally, with regard to personnel, they use the 30-30 rule to know when to get to a safe place.

Mike showed us what happens if there is an adverse event that impacts Qwest or its customers. Simply put, they find out what happened, assess the impact on Qwest or its customers, and start recovery operations, scaled appropriately to the assessment. During recovery, Business Community/Disaster Recovery Resources may be invoked. This enables a variety of alternative communication networks to aid recovery. During recovery, progress is monitored and progress reports are issued to the public through the media. Finally, after recovery, debriefing is done to find out what worked and what did not work. To close the presentation, Mike gave the example of a lightning strike to a facility in Des Moines, Iowa. The strike did not cause any direct electronic damage, but did scramble the software, which meant the system needed to be reset manually. This was all transparent to the customers as backup systems came online right after the primary was hit.

7. These minutes do not represent official positions of LDC or its members. They simply reflect the comments made at the meeting.
8. Next meeting: Friday, August 10, 2007 at 11:30 am in the Main Auditorium of St. Anthony Central Hospital.

Respectfully submitted,

Steven E. Clark, Consulting Meteorologist

Dear LDC Members,

This is a brief essay to support the hiker's Lightning Safety Poster as presented by Ken Langford. I believe the poster should conform to the guidelines I have set forth, as demonstrated by the attached poster. My poster defines one end of an ideological split in our group. Do we make "hard line" recommendations (as reflected in my poster), or more "practical" recommendations as reflected in Dick's poster.

One of the arguments for a "practical" approach to lightning safety is the idea of the "real world." This real world is meant to reflect the practicality of human behavior. It is reasoned that if the majority of people are unlikely to take our safety recommendations because they are inconvenient, we should present instead a more palatable safety message aimed at "improving the odds" of the 'at risk' outdoorsman.

I believe this approach is a disservice to the public. As safety advocates, it is irresponsible to put out a message that offers "false hope." Such false hope enables an uneducated person to believe incorrectly that they have useful recourse, which thereby encourages them to place themselves in a hazardous situation. The fact is that we have an actual incident report of a group who took the precise recommendations that are commonly published, and were surprised when they were still struck.

The following article is from the Simcoe Reformer newspaper, 17 July 2000 in Simcoe, Ontario, Canada. A woman (named Roth) was injured by lightning while on an Outward Bound camping trip. The newspaper article says:

"(A police officer) said it seemed the group did everything they could to protect themselves against a lightning strike. He said the group split up and each of the members sat by themselves, on their life-jackets, in a forest, away from large trees. After being knocked out by the initial lightning blow, Roth was struck again a minute later just as she was beginning to regain consciousness...and was transported to Sudbury by air ambulance..."

This episode begs the question: if the message had been more firmly focused on retreat to a real safe location, rather than on "improving one's odds" in an unsafe location, would this woman have been saved from her injury?

In short, I believe that lightning physics are more "real world" than human behavior, which is often includes irrational denial of reality. It is counter to our goal of lightning safety to encourage behavior based in denial.

The other issue is one of liability. The more conservative (erring on the side of caution) a safety message is, the less likely that it can be challenged by a liability lawsuit.

Ultimately the sort of poster we are considering has too little space to fully inform anybody about the debates concerning lightning safety. I propose that we use the limited space to give a definitive and conservative safety message. Not everyone will heed the message, but that should have no bearing on what the best message is. Tell them the truth and let them make the call.

Ken Langford

PS: Carl Swanson suggested referring to risking rescue workers. I think it is better to focus on self-interest, and to keep the message as short as possible.

Hi,

I wanted a poster to be user friendly, simple, and to the point as far as lightning safety is concerned. And the color and figures are intended to attract attention. Like Ken's poster I would want it to be black with white wording and figures. It should be oriented to the uneducated as well as those who simply are not aware of what to do during weather threatening circumstances. It should be directed to those already in the field and not expect them to check the weather before they start. Most simply do not do it or expect their leader to do it. Leaders also cannot be expected to memorize all the suggestions they may be aware of while at home. The Hospitals or/ and Data Centers name need not be on the poster but I thought it would be good advertising for both and would be a good public service item. The poster could also be reduced to a plastic pocket size item in addition.

Ken's poster does not go into details as far as what to do when caught in a lightning situation. This is my whole idea of the poster and is what the Forest Service indicated they wanted. While hiking I am not interested in what I **should have done** but would like to know what I **should do now that I am in a bad situation**. His comment on the "best shelter" should also include -or an enclosed building. He did not list St. Anthony's as being in Denver. I realize this will change in the future but many would not know what city and State it is located in.

Ken suggested the last item on my list be placed at the top and that may be better. The item listing 90 miles for lightning travel has now been extended to over 100 miles but if both numbers are too far it could be changed to 20 or 30 miles. My item on a 911 call could have CPR added.

I could not easily change the above items on the enclosed poster as the poster is a picture in my file and my programs do not allow me to make changes to a picture. I am not too computer literate. The poster does need to be put in better shape via a professional.

Perhaps the way to choose the best poster from the Forest Services point of view is to have both given to the F.S. and let them make the choice. They may not like either one but can give suggestions on acceptable changes.

Dick Burrows

Three pages of comments from Greg Stewart...

WARNING: LIGHTNING DANGER!

Title: TO THE POINT.

The danger is real. Lightning kills more people every year on average than any other direct natural hazard. Of the hundreds of reported injuries, many are permanent.

Start out EMPHASIZING THE RISK with the most basic supporting statement.

Watch the sky for storm development, lightning and listen for thunder. Electrical storms can build rapidly, especially in the afternoon.

Being *aware* of changing weather is a primary instruction.

Avoid the lightning storm altogether. Plan to return from summit, ridgeline or other exposed areas by noon. If dark clouds begin to appear, don't wait to return to shelter.

Timing to avoid a storm. Self evident/basic logic: If you're back at "safest" shelter when lightning threatens, you effectively eliminate *all* risk.

If you see lightning or hear thunder *YOU ARE IN DANGER*.

Immediately seek a safer location below tree-line.

The most basic information/instruction. The next logical question a reader will have is: What constitutes a *safer* location? What is the *safest* location? Answer:

Safer location: Within a dense stand of shorter trees of uniform height.

Safest location: Inside a fully-enclosed, grounded structure or vehicle (metal-roof, windows rolled up). *NO OUTSIDE LOCATION IS TOTALLY SAFE!*

The spirit of Ron Holle is alive and well here.

NEVER seek shelter under an isolated tree.

Addresses the single deadliest mistake in shelter-seeking.

Stay at safer location 30 minutes after the last indication of lightning activity.

Another key piece of advice. Complies with NWS recommendations (30/30 rule). However, the “first half” of 30/30 rule, as presented here, is more conservative with “...if you see or hear thunder...immediately seek...”

If lightning threatens, stay at least 10 steps from other hikers to minimize the chance of multiple victims. Distance yourself from metal objects by 10 steps. These will conduct current and may become super-heated if struck.

These distancing guidelines are based on numerous discussions, consultation with outdoor guides and is drawn from reliable back-country lightning safety literature. It’s easy to remember 10 steps. Note: the *reason* follows both sets of instructions.

If a hiker is struck, administer CPR or other first aid immediately. Call 911 for emergency medical assistance.

The most basic, critical instructions for “what to do if...”

The recommendations above cannot **ensure** safety but are offered to **decrease** the chance of being struck.

Provided by: The Lightning Data Center, St. Anthony Central Hospital, Denver, Colorado.
What would a safety notice be without the all-important disclaimer?

Lightning Safety Notice

NPS/NFS Trailhead

Purpose

Audience

We are targeting an audience who has already made the decision to *leave safe shelter* for outdoor recreation. As they (readers) are at the trailhead, they have already considered inherent risks of leaving home (and their vehicle). In reality, there's likely to be greater risks than lightning associated with travel to the parking lot.

Goal

We are accomplishing two important things with the notice:

1. Highlighting/emphasizing the risk (lightning as natural hazard).
2. Presenting specific recommendations intended to reduce (not eliminate) the chances of an incident.

Lightning hazard is a nation-wide concern. Because we're creating the notice for the *National Park/Forest Service* it can be utilized in all states with similar levels of lightning activity.

Regarding language: the set of recommendations were written with attention to specific, concise wording. No assumptions can be made regarding the reader's level of common sense. Items presented were chosen using "editorial triage" or, assigning degrees of urgency to each idea in a logical order. We have discussed and debated many aspects of safety within the LDC and are in a position to distill the most important concepts for practical application.

The safety notice acknowledges (and posts in capital letters) the following simple truth: "No outside location is totally safe." Because of this premise, we are prescribing a means of *managing/reducing* the risk level with specific recommendations. It is a common sense approach geared toward hikers of all ages.

Addendum on the Lightning/Ipod issue, from Abdul Mousa's Yahoo Lightning Protection discussion site.

On July 12, 2007, two local newspapers (Metro and 24Hours) in my city (Vancouver, Canada), carried a story of a man who received a lightning injury while wearing his "iPod" (a portable device for listening to music stored in a special format, using head phones). The man suffered damage to his ears and jawbone. The warning then followed that "lightning and iPods do not mix"! Both articles referred to an article in the New England Journal of Medicine.

Later that morning, Mr. Bruce Doerle kindly brought to my attention a July 11, 2007 article in New Scientist on the same incident:
<http://www.newscientist.com/article.ns?id=dn12225&print=true>

Copies of both this and the articles of the Vancouver newspapers are enclosed.

On July 17, 2007, Dr. Tony Almeida of the University of Coimbra in Portugal also spoke of the error in blaming the injury on use of the iPod (or any other portable music device). I agree that a clarification of the said incident is in order.

The victim was standing under a tree during a thunderstorm, thus violating a fundamental safety rule. When lightning struck the tree, a side flash then occurred to his body. In situations like this, high currents and overheating will occur in any metallic object on the person's body: a necklace, the wires of earphones, etc.

An incident of the same type, but without iPods, happened in Hyde Park in London, Britain, during June 2000. Two women were killed when lightning struck a tree under which they were sitting. One of those two women (named Sunea Whitworth, 39 years old) was wearing a bra with a metallic wire frame. The metal in the bra melted and caused severe burn marks on her chest.

The conclusion from the bra incident was not that women should not wear bras during thunderstorms! Rather, people should not take shelter under trees during thunderstorms. Similarly, the iPod should not be blamed for the present incident. For the side flash from the struck tree would have injured that person regardless of whether he was wearing an iPod or not.

Thank you.

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